Inspection Report For Well: UT20736 - 06602

U.S. Environmental Protection Agency
Underground Injection Control Program, 8ENF-T
999 18th Street, Suite 300, Denver, CO 80202-2466
This form was printed on 9/24/2013

INSPECTOR(S): Lead: Roberts, Sarah — Date: 10/10/2013 (12)
Others: Ajayi, Christopher — Time: 10:50 am / pm

OPERATOR (only if different): _____

REPRESENTATIVE(S): Chad Stevnick

PRE-INSPECTION REVIEW

Petroglyph Operating Company, Inc

Well Name:	Ute Tribal 16-05		
Well Type:	Enhanced Recovery (2R)		
Operating Status:	AC (ACTIVE) as of 4/13/2006		
Oil Field:	Antelope Creek (Duchesne)		
Location:	SWNW S16 T5S R3W		
Indian Country:	X, Uintah and Ouray		
Last Inspection:	8/28/2012	***Allowable Inj Pressure:***	1614 /
Last MIT:	Pass 3/7/2011	***Annulus Pressure From Last MIT:***	1030

BLACK = POSSIBLE VIOLATION GREY = DATA MISSING

INSPECTION TYPE: (Select One)
☐ Construction / Workover ☐ Response to Complaint ☐ Other
☐ Plugging ☒ Routine
☐ Post-Closure ☐ Witness MIT

ICIS Entered
Date 12/20/13
Initials DB

OBSERVED VALUES:

Tubing Gauge:	☒ Yes ☐ No	Pressure: U: 1536 / L: ____ psig	Gauge Range: Scale psig	Gauge Owner:	☐ EPA ☒ Operator
Annulus Gauge:	☒ Yes ☐ No	Pressure: 0 psig	Gauge Range: opened psig	Gauge Owner:	☒ EPA ☐ Operator
Bradenhead Gauge:	☐ Yes ☐ No	Pressure: ____ psig	Gauge Range: ____ psig	Gauge Owner:	☐ EPA ☐ Operator
Pump Gauge:	☐ Yes ☐ No	Pressure: ____ psig	Gauge Range: ____ psig	Gauge Owner:	☐ EPA ☐ Operator

Operating Status: (Select One)
☒ Active ☐ Not Injecting ☐ Plugged and Abandoned
☐ Being Reworked ☐ Production ☐ Under Construction

U2 Entered
Date 12/17/13
Initial JC

See page 2 for photos, comments, and site conditions.

GREEN	BLUE	CBI
	\	

Inspection Report For Well: UT20736 - 06602 (PAGE 2)

PHOTOGRAPHS: ☐ Yes ☒ No List of photos taken: _____

Comments and site conditions observed during inspection: _____

GPS: GPS File ID: _____

Signature of EPA Inspector(s): _____ _____

☐ Data Entry ☐ Compliance Staff ☐ Hard Copy Filing

NOTICE OF INSPECTION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, 999 18TH STREET - SUITE 500
DENVER, COLORADO 80202-2405

Date: 12/10/13
Hour: 8:00a

Notice of inspection is hereby given according to Section 1445(b) of the Safe Drinking Water Act (42 U.S.C. §300f et seq.).

Firm Name: Petroglyph Operating, Inc.

Firm Address: Roosevelt, UT, Antelope Creek Oil Field

REASON FOR INSPECTION:

For the purpose of inspecting records, files, papers, processes, controls and facilities, and obtaining samples to determine whether the person subject to an applicable underground injection control program has acted or is acting in compliance with the Safe Drinking Water Act and any applicable condition of permit or rule authorization.

SECTION 1445(b) of the SAFE DRINKING WATER ACT is quoted below:

Section 1445(b)(1): Except as provided in Paragraph (2), the Administrator, or representatives of the Administrator duly designated by him, upon presenting appropriate credentials, and a written notice to any supplier of water or other person subject to (a), or person subject (A) a national primary drinking water regulation prescribed under Section 1412(B) an applicable Underground Injection Control Program, or (C) any requirement to monitor an unregulated contaminant pursuant to subsection (a), or person in charge of any of the property of such supplier or other person referred to in clause (A), (B), or (C), is authorized to enter any establishment, ... facility, or other property of such supplier or other person in order to determine whether such supplier or other person has acted or is acting in compliance with this title, including for this purpose, inspection, at reasonable times, of records, files, papers, processes, controls, and facilities, or in order to test any feature of a public water system, including its raw water source. The Administrator or the Comptroller General (or any representative designated by either) shall have access for the purpose of audit and examination to any records, reports, or information of a grantee which are required to be maintained under subsection (a) or which are pertinent to any financial assistance under this title.

Sarah Roberts
Inspector's Name & Title (Print)

Inspector's Signature

EPA R8 3560-1 (8-89)

Original - Regional Office Copy
Yellow Copy - Operator Copy

Inspection Report For Well: UT20736 - 06602

U.S. Environmental Protection Agency
Underground Injection Control Program, 8ENF-T
999 18th Street, Suite 300, Denver, CO 80202-2466
This form was printed on 7/27/2012

INSPECTOR(S): Lead: Breffle, Don Date: 8/28/2012
Others: Zhang, Qian Time: 12:01 am / pm

OPERATOR (only if different): Chad Hickson, Rodrigo Heredia

REPRESENTATIVE(S): _____

PRE-INSPECTION REVIEW

Petroglyph Operating Company, Inc

Well Name:	Ute Tribal 16-05		
Well Type:	Enhanced Recovery (2R)		
Operating Status:	AC (ACTIVE) as of 4/13/2006		
Oil Field:	Antelope Creek (Duchesne)		
Location:	SWNW S16 T5S R3W		
Indian Country:	X, Uintah and Ouray		
Last Inspection:	7/13/2010	***Allowable Inj Pressure:***	1614 /
Last MIT:	Pass 3/7/2011	***Annulus Pressure From Last MIT:***	1030

BLACK = POSSIBLE VIOLATION GREY = DATA MISSING

INSPECTION TYPE: (Select One)
- ☐ Construction / Workover
- ☐ Plugging
- ☐ Post-Closure
- ☐ Response to Complaint
- ☒ Routine
- ☐ Witness MIT
- ☐ Other

ICIS Entered
Date 9/11/12
Initials DB

OBSERVED VALUES:

Tubing Gauge:	☒ Yes ☐ No	Pressure: U: 1552 / L: ____ psig	Gauge Range: SCADA psig	Gauge Owner:	☐ EPA ☒ Operator
Annulus Gauge:	☒ Yes ☐ No	Pressure: 0 psig	Gauge Range: opened annulus psig	Gauge Owner:	☐ EPA ☒ Operator
Bradenhead Gauge:	☐ Yes ☐ No	Pressure: ____ psig	Gauge Range: ____ psig	Gauge Owner:	☐ EPA ☐ Operator
Pump Gauge:	☐ Yes ☐ No	Pressure: ____ psig	Gauge Range: ____ psig	Gauge Owner:	☐ EPA ☐ Operator

Operating Status: (Select One)
- ☐ Active
- ☒ Not Injecting
- ☐ Plugged and Abandoned
- ☐ Being Reworked
- ☐ Production
- ☐ Under Construction

12 Entered
Date 9/12/12
Initial DB

See page 2 for photos, comments, and site conditions.

BLUE	CBI
1	

Inspection Report For Well: UT20736 - 06602 (PAGE 2)

PHOTOGRAPHS: ☐ Yes ☒ No List of photos taken: _____

Comments and site conditions observed during inspection: _____

no input flow

GPS: GPS File ID: _____

Signature of EPA Inspector(s): _____ _____ _____

☐ Data Entry ☐ Compliance Staff ☐ Hard Copy Filing

NOTICE OF INSPECTION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, 999 18TH STREET - SUITE 500
DENVER, COLORADO 80202-2405

Date: 8/28/12 Hour: 8:00 AM	Notice of inspection is hereby given according to Section 1445(b) of the Safe Drinking Water Act (42 U.S.C. §300f et seq.).

Firm Name: Petroglyph Operating Co

Firm Address: 4116 W 3000 S Loka La
Roosevelt, UT

REASON FOR INSPECTION:

For the purpose of inspecting records, files, papers, processes, controls and facilities, and obtaining samples to determine whether the person subject to an applicable underground injection control program has acted or is acting in compliance with the Safe Drinking Water Act and any applicable condition of permit or rule authorization.

SECTION 1445(b) of the SAFE DRINKING WATER ACT is quoted below:

Section 1445(b)(1): Except as provided in Paragraph (2), the Administrator, or representatives of the Administrator duly designated by him, upon presenting appropriate credentials, and a written notice to any supplier of water or other person subject to (a), or person subject (A) a national primary drinking water regulation prescribed under Section 1412(B) an applicable Underground Injection Control Program, or (C) any requirement to monitor an unregulated contaminant pursuant to subsection (a), or person in charge of any of the property of such supplier or other person referred to in clause (A), (B), or (C), is authorized to enter any establishment, ... facility, or other property of such supplier or other person in order to determine whether such supplier or other person has acted or is acting in compliance with this title, including for this purpose, inspection, at reasonable times, of records, files, papers, processes, controls, and facilities, or in order to test any feature of a public water system, including its raw water source. The Administrator or the Comptroller General (or any representative designated by either) shall have access for the purpose of audit and examination to any records, reports, or information of a grantee which are required to be maintained under subsection (a) or which are pertinent to any financial assistance under this title.

Don Bretzke
Inspector's Name & Title (Print)
Qian Zhang

Inspector's Signature

EPA R8 3560-1 (8-89)

Original - Regional Office Copy
Yellow Copy - Operator Copy

OMB No. 2040-0042 Approval Expires 11/30/2014

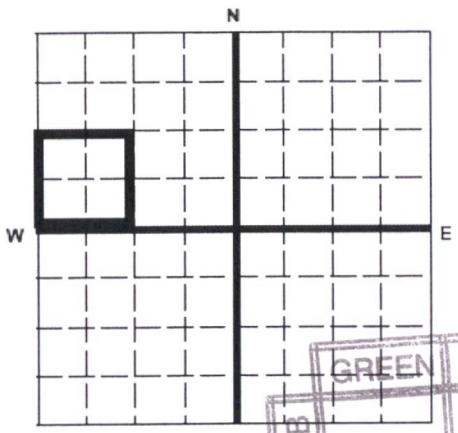
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah, 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-06602

Surface Location Description
___ 1/4 of ___ 1/4 of SW 1/4 of NW 1/4 of Section 16 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1974 ft. frm (N/S) N Line of quarter section
and 522 ft. from (E/W) W Line of quarter section.

U2 Entered
Date 4/3/17
Initial SB

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 16-05

GREEN BLUE CB TAB 2

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	16	1513	1533	1900		0	0
February	16	1479	1551	1450		0	0
March	16	1352	1549	1080		0	0
April	16	1411	1500	2033		0	0
May	16	1752	1842	3967		0	0
June	16	1527	1551	2061		0	0
July	16	1518	1532	2109		0	0
August	16	1475	1571	2163		0	0
September	16	1550	1571	2316		0	0
October	16	1530	1544	2394		0	0
November	16	1505	1553	2220		0	0
December	16	1562	1582	2509		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		03/21/2017

Petroglyph Operating Company, Inc.
Annulus Pressure Cause and Mitigation Measures
EPA Annual Injection Report for Reporting Period 2016

Well Name: Ute Tribal 16-05

UIC Permit Number: UT2736-04434

API Number: 43-013-32160

Cause of Pressure and Mitigation Measures:

Petroglyph performed a long term step-rate test on the UT 16-05 beginning in April 2016 and concluding on 05/19/2016. During the first 19 days in May, the injection pressure averaged 1864.17 and the injection rate averaged 205.79. The reason for exceeding the maximum injection pressure during this time, was that we were gathering pressure information for the higher rate portion of the step-rate test. Upon completion of the step-rate test, the UT 16-05 injection pressure averaged 1574.55 at an average injection rate of 54.75 from 05/20/2016 to 05/31/2016.

PETROGLYPH

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

multi-chem
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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 16-05 INJ, DUCHESNE**	Lab Tech:	**Michele Pike**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2017**		
Sample ID:	**WA-345363**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	**1/25/2017**
System Temperature 1 (°F):	**300**
System Pressure 1 (psig):	**2000**
System Temperature 2 (°F):	**130**
System Pressure 2 (psig):	**50**
Calculated Density (g/ml):	**1.0054**
pH:	**8.40**
Calculated TDS (mg/L):	**11662.34**
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	**0.00**
H_2S in Gas (%):	
H2S in Water (mg/L):	**0.00**
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	**0.00**
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	**4071.04**	Chloride (Cl):	**5000.00**
Potassium (K):	**34.10**	Sulfate (SO_4):	**0.00**
Magnesium (Mg):	**8.69**	Bicarbonate (HCO_3):	**2440.00**
Calcium (Ca):	**24.77**	Carbonate (CO_3):	
Strontium (Sr):	**5.28**	Hydroxide(HO):	
Barium (Ba):	**33.22**	Acetic Acid (CH_3COO)	
Iron (Fe):	**13.63**	Propionic Acid (C_2H_5COO)	
Zinc (Zn):	**0.53**	Butanoic Acid (C_3H_7COO)	
Lead (Pb):	**0.11**	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Ammonia NH_3:		Fluoride (F):	
Manganese (Mn):	**0.21**	Bromine (Br):	
Aluminum (Al):	**1.37**	Silica (SiO_2):	**30.76**
Lithium (Li):	**2.90**	Calcium Carbonate ($CaCO_3$):	
Boron (B):	**5.44**	Phosphates (PO_4):	**6.56**
Silicon (Si):	**14.38**	Oxygen (O_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	1.39	20.40	0.00	0.00	0.00	0.00	3.27	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.00	267.00	1.44	20.55	0.00	0.00	0.00	0.00	3.35	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
168.00	483.00	1.51	20.73	0.00	0.00	0.00	0.00	3.44	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
187.00	700.00	1.59	20.89	0.00	0.00	0.00	0.00	3.53	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
206.00	917.00	1.68	21.05	0.00	0.00	0.00	0.00	3.61	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
224.00	1133.00	1.77	21.18	0.00	0.00	0.00	0.00	3.69	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
243.00	1350.00	1.87	21.29	0.00	0.00	0.00	0.00	3.76	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
262.00	1567.00	1.98	21.38	0.00	0.00	0.00	0.00	3.83	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
281.00	1783.00	2.10	21.46	0.00	0.00	0.00	0.00	3.89	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2000.00	2.22	21.51	0.00	0.00	0.00	0.00	3.95	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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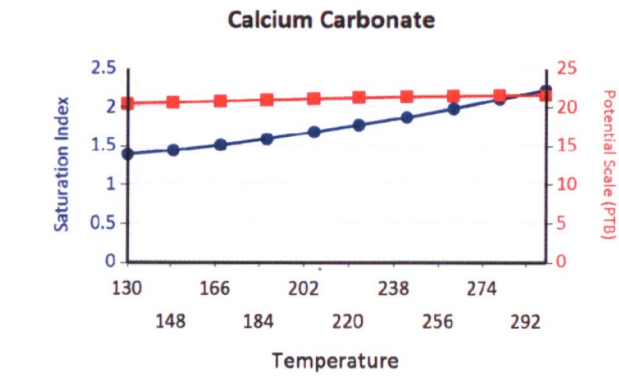
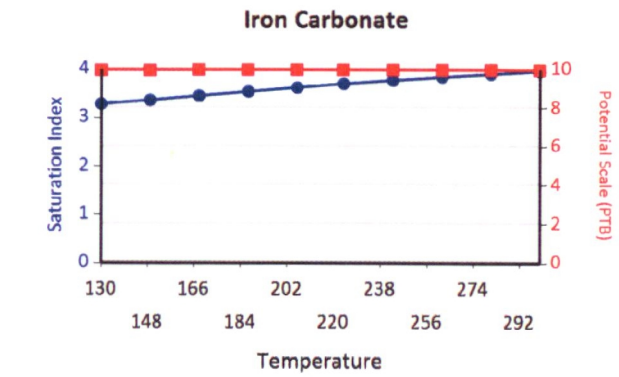
Water Analysis Report

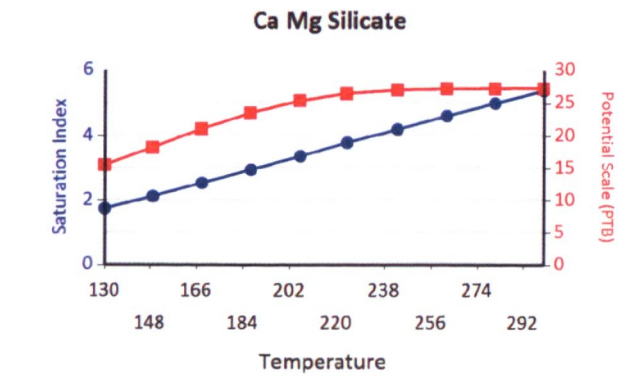
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.34	0.00	0.00	3.06	13.88	1.73	15.40	11.70	10.60
149.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63	0.35	0.00	0.00	3.78	15.23	2.11	18.08	12.13	10.60
168.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81	0.35	0.00	0.00	4.52	16.16	2.53	20.92	12.61	10.60
187.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.35	0.00	0.00	5.27	16.70	2.94	23.38	13.10	10.60
206.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13	0.35	0.00	0.00	6.00	17.00	3.36	25.24	13.61	10.60
224.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	2.27	0.35	0.00	0.00	6.72	17.17	3.77	26.36	14.12	10.60
243.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	2.39	0.35	0.00	0.00	7.43	17.26	4.18	26.87	14.63	10.60
262.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.35	0.00	0.00	8.11	17.30	4.59	27.06	15.14	10.60
281.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	2.59	0.35	0.00	0.00	8.78	17.33	4.98	27.11	15.64	10.60
300.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	2.66	0.35	0.00	0.00	9.42	17.35	5.37	27.13	16.12	10.60

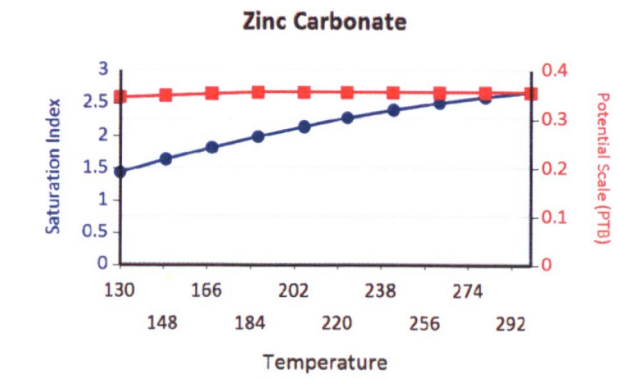
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate









Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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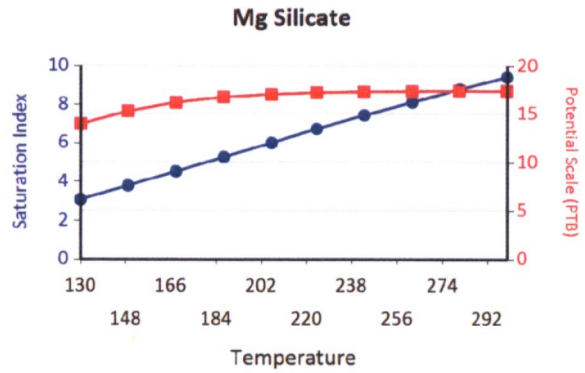
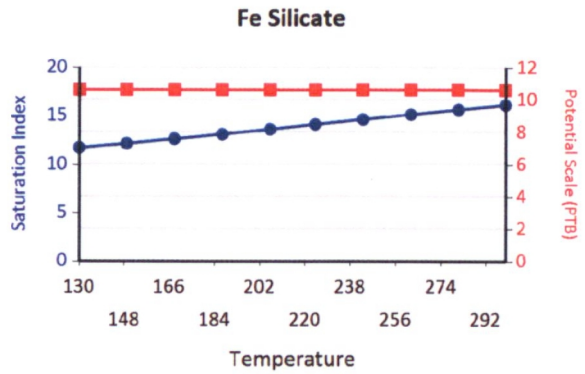




OMB No. 2040-0042 Approval Expires 11/30/2014

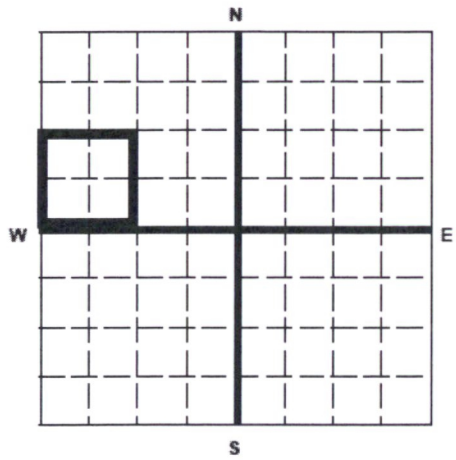
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah, 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-~~04434~~ 06602

Surface Location Description
___ 1/4 of ___ 1/4 of SW 1/4 of NW 1/4 of Section 16 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1974 ft. frm (N/S) N Line of quarter section
and 522 ft. from (E/W) W Line of quarter section.

U2 Entered
Date 3/1/16
Initial JB

WELL ACTIVITY	TYPE OF PERMIT
[ ] Brine Disposal	[ ] Individual
[X] Enhanced Recovery	[X] Area
[ ] Hydrocarbon Storage	Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 16-05

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	15	1463	1530	1587		0	0
February	15	1542	1563	1765		0	0
March	15	1533	1583	1910		0	0
April	15	1534	1575	1924		0	0
May	15	1561	1575	2024		0	0
June	15	1556	1572	1929		0	0
July	15	1544	1548	1955		0	0
August	15	1563	1579	2104		0	0
September	15	1548	1570	1886		0	0
October	15	1516	1529	1869		0	0
November	15	1515	1522	1787		0	0
December	15	1519	1539	1931		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		02/08/2016

EPA Form 7520-11 (Rev. 12-11)

GREEN BLUE CBL
TAB 2

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 16-05 INJ, DUCHESNE**	Lab Tech:	**Michele Pike**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2016**		
Sample ID:	**WA-327641**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	1/14/2016
System Temperature 1 (°F):	60
System Pressure 1 (psig):	2000
System Temperature 2 (°F):	180
System Pressure 2 (psig):	50
Calculated Density (g/ml):	1.0057
pH:	8.50
Calculated TDS (mg/L):	12198.63
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	0.00
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	4295.26	Chloride (Cl):	5500.00
Potassium (K):	28.54	Sulfate (SO_4):	60.00
Magnesium (Mg):	21.69	Bicarbonate (HCO_3):	2196.00
Calcium (Ca):	50.40	Carbonate (CO_3):	
Strontium (Sr):	5.87	Acetic Acid (CH_3COO)	
Barium (Ba):	6.94	Propionic Acid (C_2H_5COO)	
Iron (Fe):	5.24	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	2.72	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.50	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.01	Silica (SiO_2):	25.46
Aluminum (Al):	0.04	Calcium Carbonate ($CaCO_3$):	
Lithium (Li):	1.92	Phosphates (PO_4):	6.15
Boron (B):	3.90	Oxygen (O_2):	
Silicon (Si):	11.90		

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	1.93	43.01	0.65	3.14	0.00	0.00	3.12	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167.00	267.00	1.85	42.70	0.67	3.20	0.00	0.00	3.02	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	483.00	1.78	42.42	0.71	3.27	0.00	0.00	2.93	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	700.00	1.72	42.11	0.75	3.35	0.00	0.00	2.84	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
127.00	917.00	1.66	41.77	0.81	3.45	0.00	0.00	2.75	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	1133.00	1.60	41.41	0.88	3.55	0.00	0.00	2.66	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	1350.00	1.55	41.04	0.96	3.65	0.00	0.00	2.57	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87.00	1567.00	1.51	40.66	1.05	3.74	0.00	0.00	2.48	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	1783.00	1.47	40.29	1.17	3.83	0.00	0.00	2.39	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	2000.00	1.43	39.93	1.30	3.91	0.00	0.00	2.30	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Multi-Chem Analytical Laboratory
1553 East Highway 40
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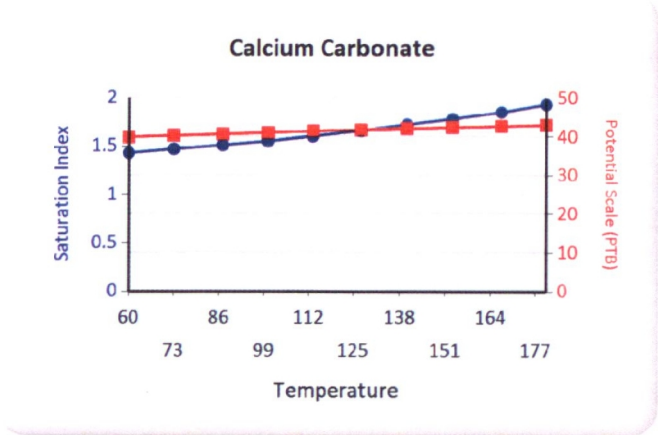
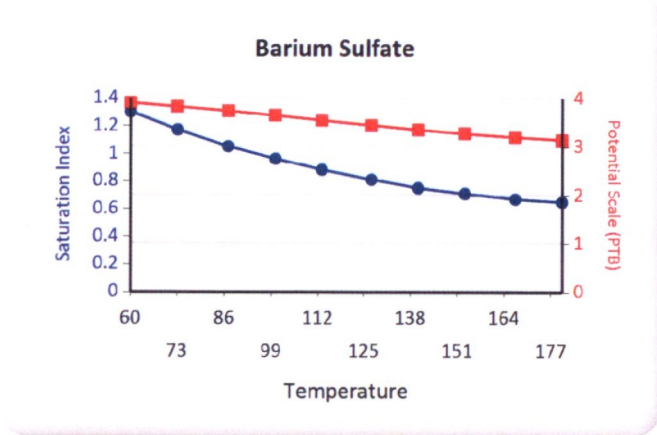
Water Analysis Report

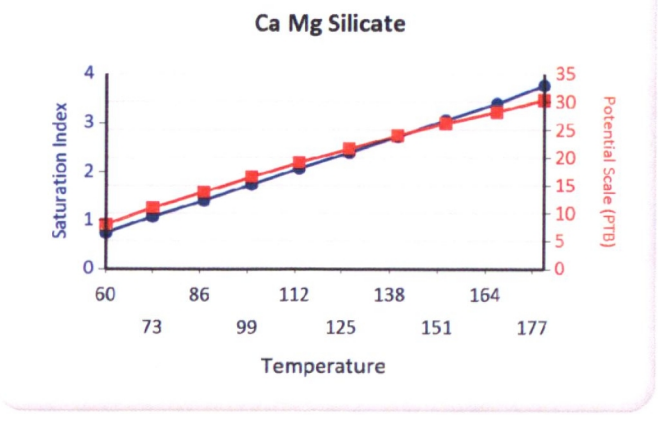
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	2.69	1.83	0.00	0.00	6.66	40.31	3.76	30.40	12.05	4.08
167.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	1.82	0.00	0.00	6.03	38.19	3.39	28.23	11.59	4.08
153.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	2.39	1.82	0.00	0.00	5.44	35.98	3.05	26.23	11.18	4.07
140.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	1.82	0.00	0.00	4.85	33.34	2.72	24.02	10.78	4.07
127.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07	1.81	0.00	0.00	4.26	30.32	2.39	21.65	10.39	4.07
113.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	1.81	0.00	0.00	3.67	27.01	2.06	19.16	10.00	4.07
100.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	1.79	0.00	0.00	3.07	23.44	1.73	16.57	9.62	4.07
87.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.77	0.00	0.00	2.46	19.59	1.40	13.87	9.25	4.07
73.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	1.74	0.00	0.00	1.85	15.43	1.07	11.03	8.88	4.07
60.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07	1.67	0.00	0.00	1.23	10.88	0.74	8.02	8.52	4.07

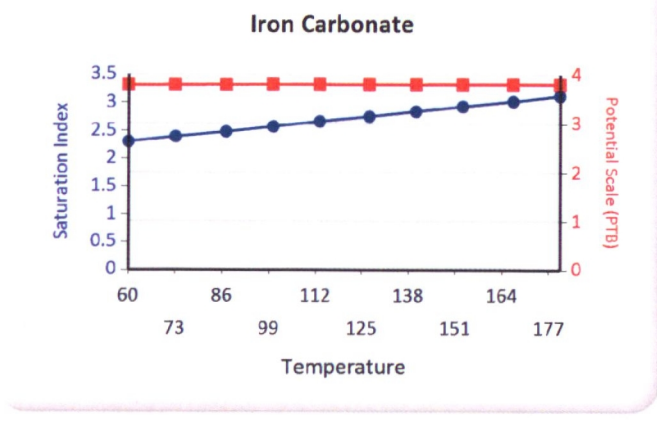
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate









Multi-Chem Analytical Laboratory
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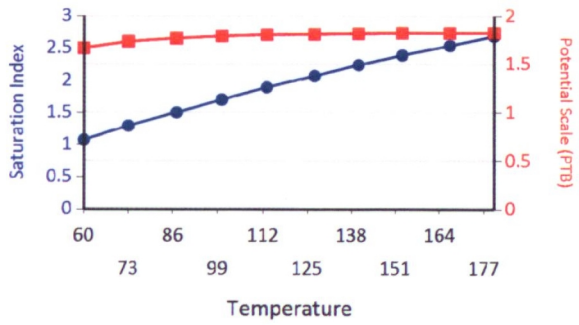
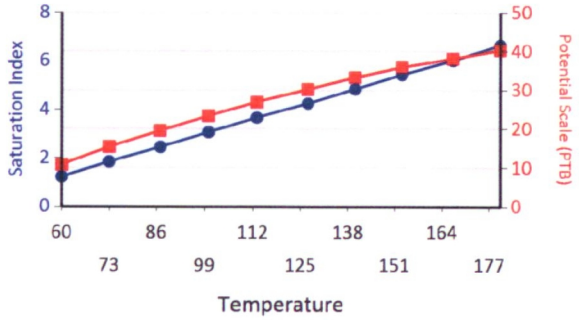
Water Analysis Report

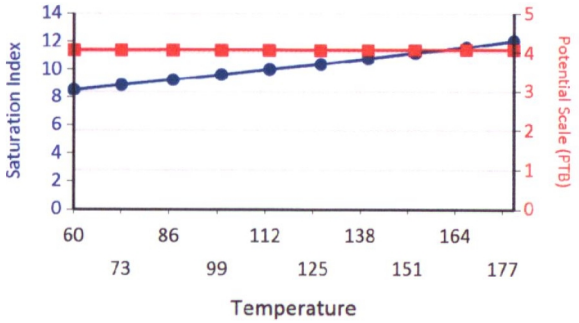
Zinc Carbonate



Mg Silicate



Fe Silicate



Mechanical Integrity Test
Tubing/Casing Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program
1595 Wynkoop Street, Denver, CO 80202

EPA Witness: _____ Date: 3/2/16
Test conducted by: CHAD STEVENSON
Others present: _____

Well Name: 16-05 UT20736-06602 Type: ER SWD **Status:** AC TA UC
Field: ANTELOPE CREEK
Location: 16-05 Sec: ___ T ___ N/S R ___ E/W County: DUCHESNE State: UT
Operator: PETROGLYPH ENERGY
Last MIT: / / **Maximum Allowable Pressure:** _____ **PSIG**

Regularly scheduled test? [X] Yes [ ] No
Initial test for permit? [ ] Yes [ ] No
Test after well rework? [ ] Yes [ ] No

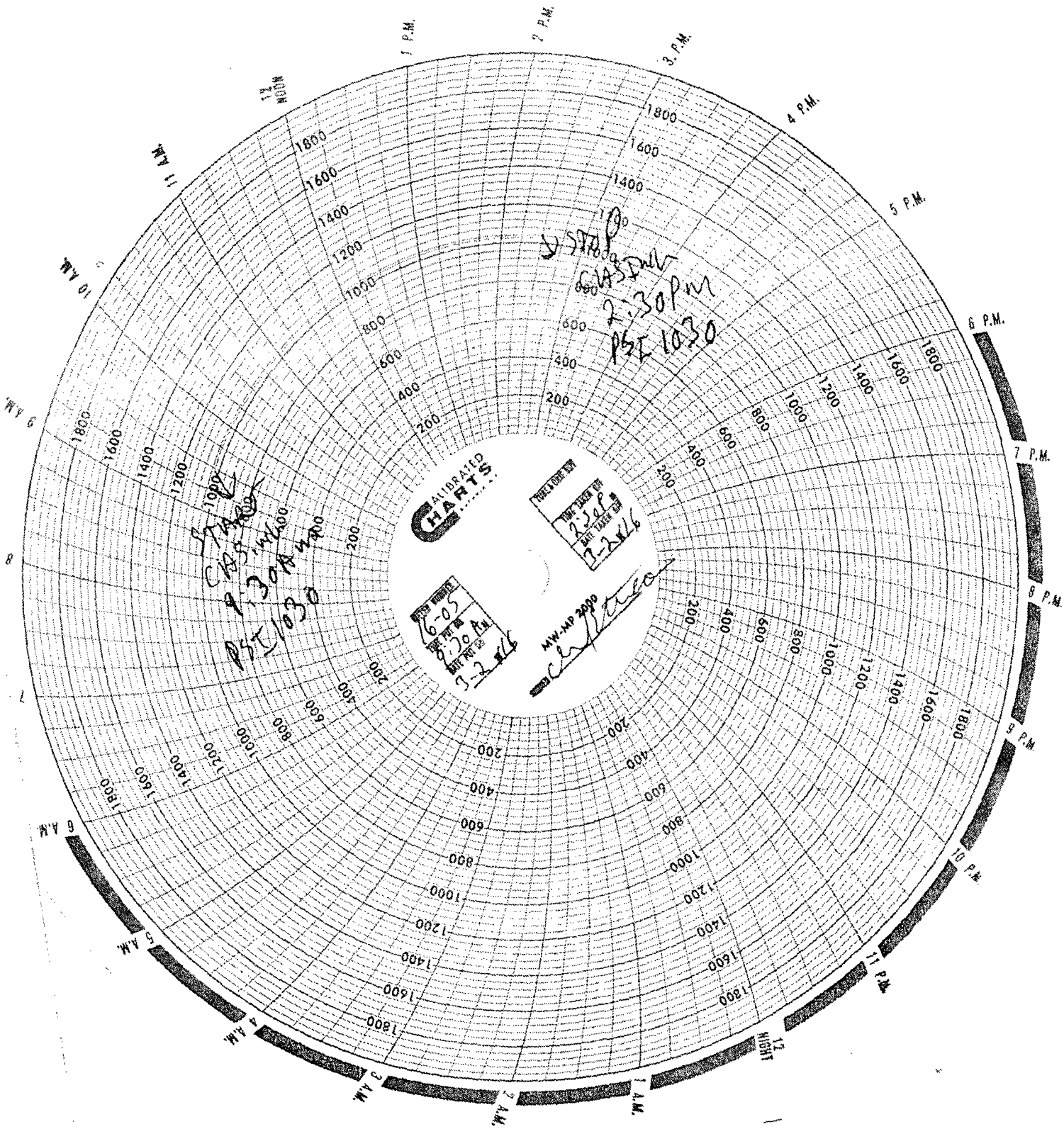
U2 Entered
Date 4/25/16
Initial DB

Well injecting during test? If Yes, rate: 93 bpd
Pre-test annulus pressure: _____ psig

MIT DATA TABLE	Test #1	Test #2	Test #3
TUBING		**PRESSURE RECORD**	
Initial Pressure	1582 psig	psig	psig
End of test pressure	1582 psig	psig	psig
CASING / TUBING ANNULUS		**PRESSURE RECORD**	
0 minutes	1030 psig	psig	psig
5 minutes	1030 psig	psig	psig
10 minutes	1030 psig	psig	psig
15 minutes	1030 psig	psig	psig
20 minutes	1030 psig	psig	psig
25 minutes	1030 psig	psig	psig
30 minutes	1030 psig	psig	psig
5 HOURS ~~minutes~~	1030 psig	psig	psig
_____ minutes	psig	psig	psig
RESULT	[ ] Pass [ ] Fail	[ ] Pass [ ] Fail	[ ] Pass [ ] Fail

Does the annulus pressure build back up after the test ? If Yes, _____ psig.

GREEN
TAB 2


12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.
12 NIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8
9 A.M.
10 A.M.
11 A.M.
CALIBRATED CHARTS
MW-MP 2000
6-05
8:30 AM
9-2-16
2:30 PM
9-2-16
1800
1600
1400
1200
1000
800
600
400
200

OMB No. 2040-0042 Approval Expires 12/31/2011

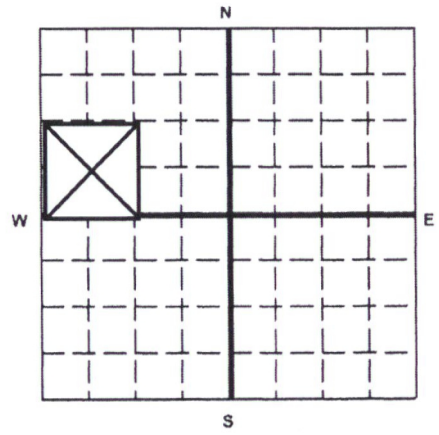
EPA

United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee	Name and Address of Surface Owner
Petroglyph Operating Company, Inc. 2258 P.O. Box 7608 Boise, Idaho 83709	Ute Indian Tribe P.O. Box 70 Ft. Duchesne, Utah 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-06602

Surface Location Description

___ 1/4 of ___ 1/4 of SW 1/4 of NW 1/4 of Section 16 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1974 ft. frm (N/S) N Line of quarter section and 522 ft. from (E/W) W Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 16-05

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	14	1547	1555	2444		0	0
February	14	1556	1562	2101		0	0
March	14	1566	1576	2447		0	0
April	14	1543	1569	2220		0	0
May	14	1557	1580	2413		0	0
June	14	1547	1553	2183		0	0
July	14	1522	1546	1889		0	0
August	14	1555	1578	1988		0	0
September	14	1504	1538	1871		0	0
October	14	1511	1534	2072		0	0
November	14	1498	1562	2288		0	0
December	14	1557	1572	2408		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		2/10/2015

EPA Form 7520-11 (Rev. 12-08)

U2 Entered
Date 3/20/15
Initial GW

TAB	GREEN	BLUE	CBI
		2	

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 16-05 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297514**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/14/2015
System Temperature 1 (°F):	160
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	80
System Pressure 2 (psig):	15
Calculated Density (g/ml):	0.9987
pH:	6.50
Calculated TDS (mg/L):	2286.36
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	16.00
H_2S in Gas (%):	
H2S in Water (mg/L):	5.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	246.82	Chloride (Cl):	1000.00
Potassium (K):	3.70	Sulfate (SO_4):	321.00
Magnesium (Mg):	72.71	Bicarbonate (HCO_3):	488.00
Calcium (Ca):	127.84	Carbonate (CO_3):	
Strontium (Sr):	4.27	Acetic Acid (CH_3COO)	
Barium (Ba):	0.39	Propionic Acid (C_2H_5COO)	
Iron (Fe):	0.84	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.53	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.00	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.08	Silica (SiO_2):	20.18

Notes:
B=.88 Al=.04 Li=.25

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum $CaSO_4 \cdot 2H_2O$		Celestite $SrSO_4$		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.00	0.00	1.19	0.22	0.54	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.61	0.28
88.00	157.00	0.00	0.00	1.10	0.21	0.39	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.36	0.28
97.00	300.00	0.00	0.00	1.02	0.21	0.38	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.24	0.28
106.00	443.00	0.00	0.00	0.96	0.21	0.38	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.14	0.28
115.00	585.00	0.00	0.00	0.89	0.20	0.38	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.05	0.28
124.00	728.00	0.00	0.00	0.84	0.20	0.40	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.96	0.28
133.00	871.00	0.00	0.00	0.79	0.19	0.42	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.88	0.28
142.00	1014.00	0.00	0.00	0.74	0.19	0.44	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.81	0.28
151.00	1157.00	0.00	0.00	0.70	0.19	0.47	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.75	0.28
160.00	1300.00	0.00	0.00	0.67	0.18	0.51	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69	0.28

		Hemihydrate $CaSO_4 \sim 0.5H_2O$		Anhydrate $CaSO_4$		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

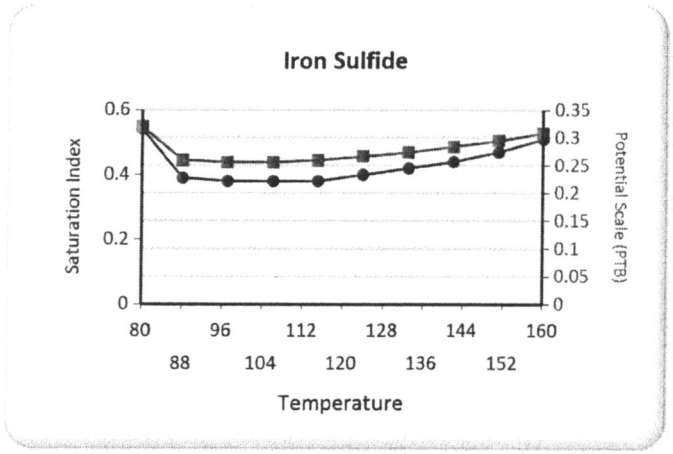
Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

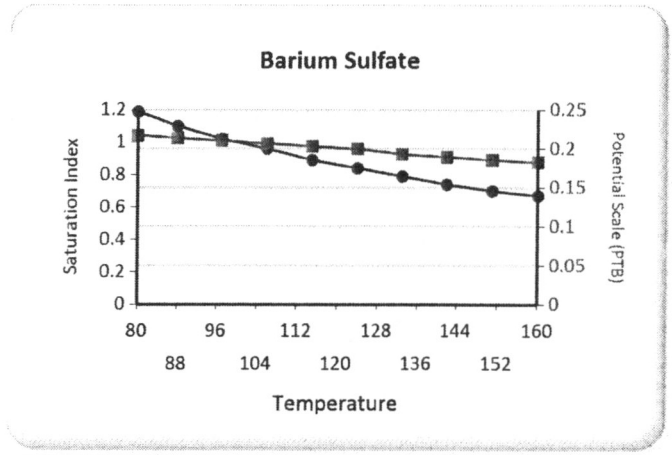
multi-chem®
A HALLIBURTON SERVICE

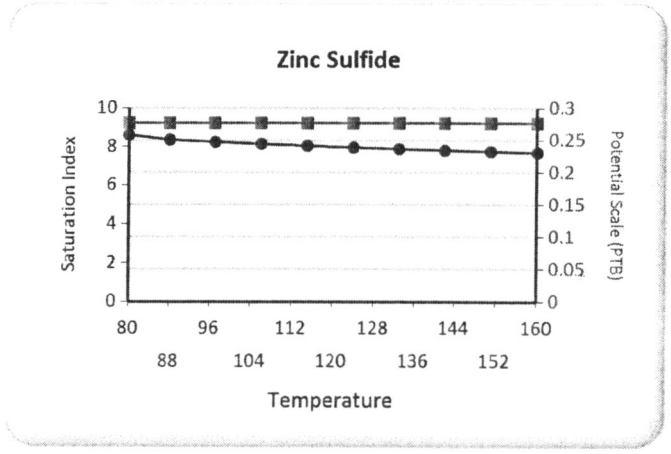
Water Analysis Report

These scales have positive scaling potential under initial temperature and pressure: Barium Sulfate Iron Sulfide Zinc Sulfide

These scales have positive scaling potential under final temperature and pressure: Barium Sulfate Iron Sulfide Zinc Sulfide







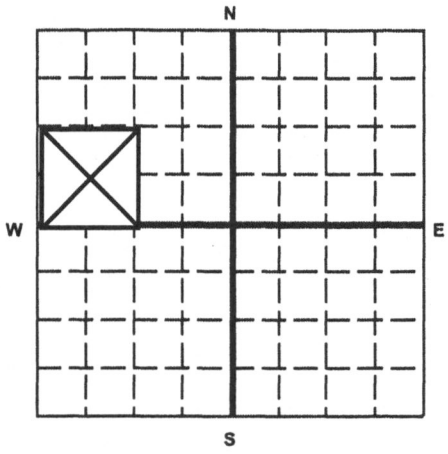
OMB No. 2040-0042 Approval Expires 12/31/2011

United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee	Name and Address of Surface Owner
Petroglyph Operating Company, Inc. 2258 P.O. Box 7608 Boise, Idaho 83709	Ute Indian Tribe P.O. Box 70 Ft. Duchesne, Utah 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-06602

Surface Location Description

[ ] 1/4 of [ ] 1/4 of [SW] 1/4 of [NW] 1/4 of Section [16] Township [5S] Range [3W]

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location [1974] ft. frm (N/S) [N] Line of quarter section and [522] ft. from (E/W) [W] Line of quarter section.

WELL ACTIVITY	TYPE OF PERMIT
[ ] Brine Disposal	[ ] Individual
[X] Enhanced Recovery	[X] Area
[ ] Hydrocarbon Storage	Number of Wells [111]

Lease Name [Ute Indian Tribe] Well Number [UTE TRIBAL 16-05]

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	13	55	277	0		0	0
February	13	846	1289	0		0	0
March	13	1027	1115	0		0	0
April	13	863	918	0		0	0
May	13	1157	1397	0		0	0
June	13	1137	1206	0		0	0
July	13	901	1567	0		0	0
August	13	1064	1500	3132		0	0
September	13	1554	1590	2388		0	0
October	13	1497	1585	1579		0	0
November	13	1549	1583	2642		0	0
December	13	1538	1551	2559		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		2/11/2014

EPA Form 7520-11 (Rev. 12-08)

GREEN TAB | BLUE 2 | CD

UE Entered
Date 3/18/14
Initial JB

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Units of Measurement: **Standard**

Water Analysis Report

Production Company: **PETROGLYPH ENERGY INC**
Well Name: **UTE TRIBAL 16-05 INJ**
Sample Point: **Wellhead**
Sample Date: **1/8/2014**
Sample ID: **WA-263384**

Sales Rep: **James Patry**
Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/15/2014
System Temperature 1 (°F):	180
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	60
System Pressure 2 (psig):	15
Calculated Density (g/ml):	0.999
pH:	7.50
Calculated TDS (mg/L):	2435.77
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	170.00	Chloride (Cl):	1000.00
Potassium (K):	5.00	Sulfate (SO_4):	288.00
Magnesium (Mg):	67.00	Bicarbonate (HCO_3):	732.00
Calcium (Ca):	145.00	Carbonate (CO_3):	
Strontium (Sr):	4.00	Acetic Acid (CH_3COO)	
Barium (Ba):	0.38	Propionic Acid (C_2H_5COO)	
Iron (Fe):	2.90	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.02	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.00	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.07	Silica (SiO_2):	21.40

Notes:
B=.6 Al=.01 Li=.06

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum $CaSO_4 \cdot 2H_2O$		Celestite $SrSO_4$		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	0.83	46.68	1.33	0.22	0.00	0.00	0.88	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	157.00	0.81	45.37	1.18	0.21	0.00	0.00	0.92	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86.00	300.00	0.86	48.50	1.05	0.21	0.00	0.00	1.02	1.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	443.00	0.92	52.02	0.94	0.20	0.00	0.00	1.12	1.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	585.00	0.98	55.88	0.84	0.19	0.00	0.00	1.23	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126.00	728.00	1.05	60.04	0.76	0.19	0.00	0.00	1.33	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	871.00	1.13	64.43	0.69	0.18	0.00	0.00	1.44	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	1014.00	1.20	68.99	0.64	0.18	0.00	0.00	1.54	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166.00	1157.00	1.29	73.68	0.59	0.17	0.00	0.00	1.64	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.00	1300.00	1.37	78.41	0.56	0.16	0.00	0.00	1.75	2.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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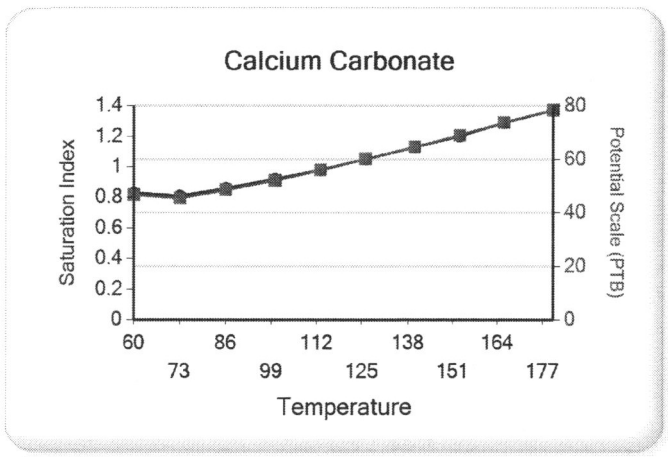
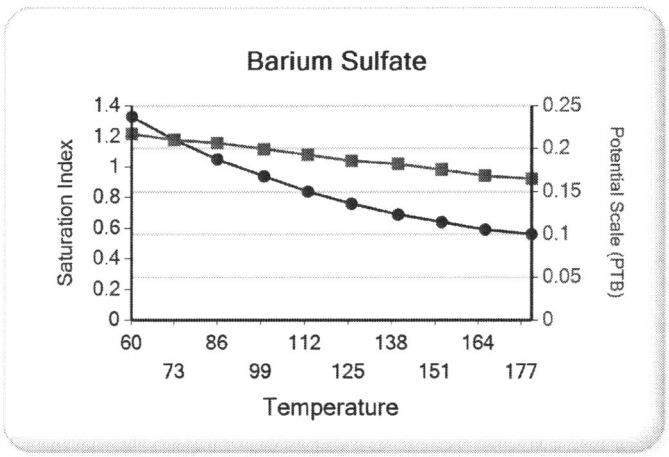
Water Analysis Report

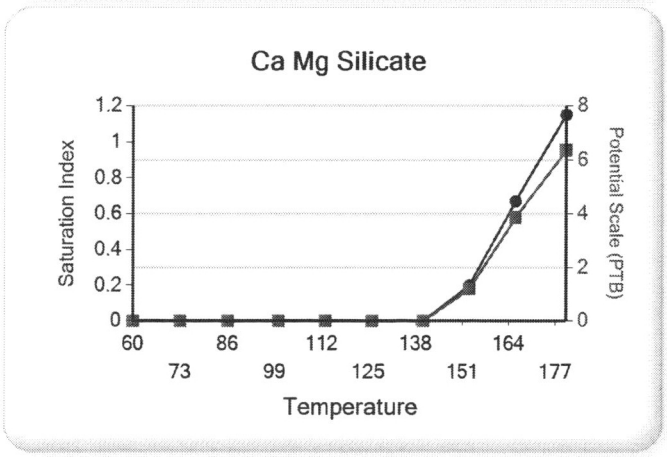
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.37
73.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	1.40
86.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	1.64
100.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49	1.83
113.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.03	1.97
126.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.59	2.06
140.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	4.75	0.00	0.00	4.17	2.13
153.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	9.84	0.20	1.20	4.77	2.18
166.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	14.84	0.67	3.86	5.38	2.21
180.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.18	19.19	1.15	6.35	6.00	2.23

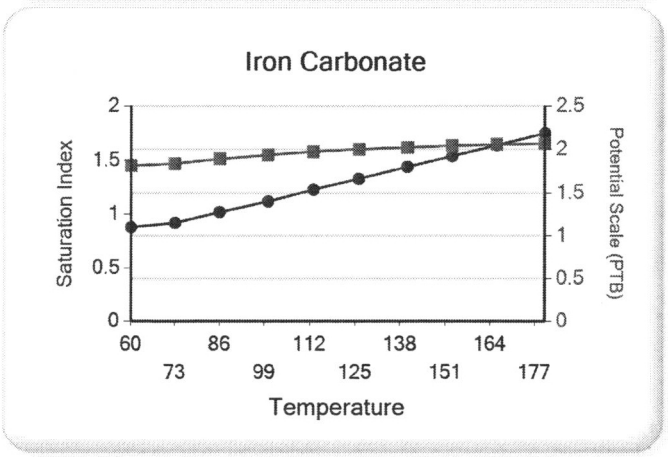
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Mg Silicate Ca Mg Silicate Fe Silicate









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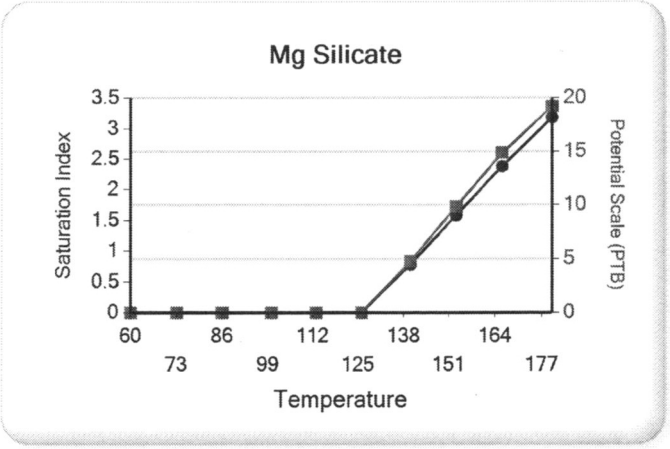
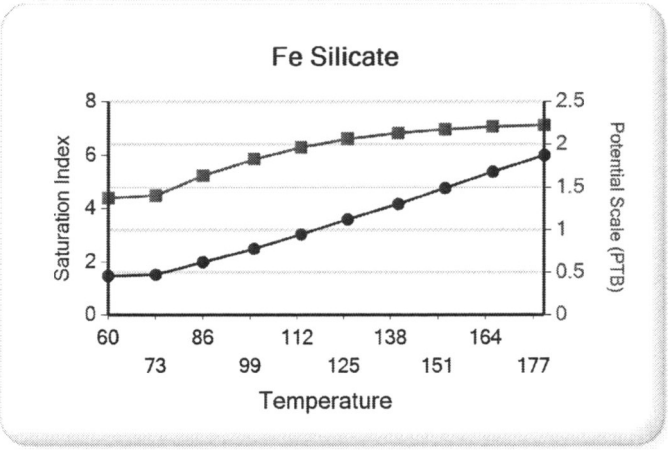
Water Analysis Report





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

AUTHORIZATION FOR ADDITIONAL WELL

UIC Area Permit No: UT20736-00000

The Antelope Creek Waterflood Final UIC Area Permit No. UT20736-00000, effective July 12, 1994, authorizes injection for the purpose of enhanced oil recovery into multiple lenticular sand units which are distributed throughout the lower portion of the Green River Formation. On December 13, 2004, the permittee provided notice to the Director concerning the following additional enhanced recovery injection well:

Well Name:	**Ute Tribal 16-05**
EPA Well ID Number:	**UT20736-06602**
Location:	522 ft FWL & 1974 ft FNL SW NW Sec. 16 - T5S - R3W Duchesne County, Utah.

Pursuant to 40 CFR §144.33, Area UIC Permit No. UT20736-00000 authorizes the permittee to construct and operate, convert, or plug and abandon additional enhanced recovery injection wells within the area permit. This well was determined to satisfy additional well criteria required by the permit.

This well is subject to all provisions of UIC Area Permit No. UT20736-00000, as modified and as specified in the Well Specific Requirements detailed below. This Authorization shall expire one year after the Effective Date unless the permittee has converted the well to injection or submits a written request to extend this Authorization prior to the expiration date.

This Authorization is effective upon signature.

Date: FEB 22 2006

for **Stephen S. Tuber**
*Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

** The person holding this title is referred to as the Director throughout the Permit and Authorization*

WELL-SPECIFIC REQUIREMENTS

Well Name: **Ute Tribal 16-05**
EPA Well ID Number: **UT20736-06602**

Prior to commencing injection operations, the permittee shall submit the following information and receive written Authority to Inject from the Director:

1. a successful Part I (Internal) Mechanical Integrity test (MIT);
2. pore pressure calculation of the proposed injection zone; and
3. completed Well Rework Record EPA Form No. 7520-12 and schematic diagram.

Approved Injection Zone: Injection is approved between the base of the Green River A Lime Marker, at approximately 4064 ft, to the top of the Basal Carbonate, at approximately 6073 ft.

Maximum Allowable Injection Pressure (MAIP): The initial MAIP is **1614 psig,** based on the following calculation:

MAIP = [FG - (0.433)(SG)] * D, where
FG = 0.80 psi/ft SG = 1.002 D = **4408 ft** (top perforation depth KB)
MAIP = 1614 psi

UIC Area Permit No. UT20736-00000 also provides the opportunity for the permittee to request a change of the MAIP based upon results of a step rate test that demonstrates the formation breakdown pressure will not be exceeded.

Well Construction and Corrective Action: ***Corrective Action is required.***
Based on the review of well construction and the cement bond log, well construction may not prevent significant fluid movement through vertical channels adjacent to the injection well bore, Part II (External) Mechanical Integrity (Part II MI), pursuant to standards of REGION 8 GROUND WATER SECTION GUIDANCE NO. 34 "*Cement Bond Logging Techniques and Interpretation*." Therefore the operator shall demonstrate Part II MI prior to commencing injection and at least once every five years thereafter using a temperature survey, noise log, oxygen activation log, or a radioactive tracer survey under certain circumstances. If necessary, the Director may authorize a limited period for injection prior to the test to allow for stabilization of the injection formation prior to the test.

Tubing and Packer: 2-3/8" or similar size injection tubing is approved; the packer shall be set at a depth no more than 100 ft above the top perforation; therefore, prior to injection, the existing packer should be lowered at least 8 feet and documentation submitted to the Director for review.

Corrective Action for Wells in Area of Review: ***No Corrective Action is required.*** The following wells that penetrate the confining zone are within or proximate to a 1/4 mile radius around the Ute Tribal No. 16-05 were evaluated to determine if any corrective action is necessary to prevent fluid movement into USDWs:

Well: Ute Tribal No. 16-04	Location:	NW NW	Sec. 16 - T5S - R3W
Well: Ute Tribal No. 16-04E	Location:	SE NW	Sec. 16 - T5S - R3W

Well: Ute Tribal No. 16-05F Location: SW NW Sec. 16 - T5S - R3W
Well: Ute Tribal No. 16-12 Location: NW SW Sec. 16 - T5S - R3W

Demonstration of Mechanical Integrity: A successful demonstration of Part I (Internal) Mechanical Integrity using a standard Casing-Tubing pressure test is required prior to injection and at least once every five years thereafter. EPA reviewed the cement bond log and was unable to determine if the cement will provide an effective barrier to significant upward movement of fluids through vertical channels adjacent to the well bore pursuant to 40 CFR 146.8 (a)(2). Therefore, further demonstration of Part II (External) Mechanical Integrity is required at this time and at least once every five years thereafter.

Demonstration of Financial Responsibility: The applicant has demonstrated financial responsibility via a Surety Bond that has been reviewed and approved by the EPA.

Plugging and Abandonment: The well shall be plugged in a manner that isolates the injection zone and prevents movement of fluids into or between USDWs. Tubing, packers, and any downhole apparatus shall be removed. Class A, C, G, and H cements, with additives such as accelerators and retarders that control or enhance cement properties, may be used for plugs; however, volume extending additives and gel cements are not approved for plug use. Plug placement shall be verified by tagging. Plugging gel of at least 9.2 lb/gal shall be placed between all plugs. A minimum 50 ft surface plug shall be set inside and outside of the surface casing to seal pathways for fluid migration into the subsurface. Within sixty (60) days after plugging the owner or operator shall submit Plugging Record (EPA Form 7520-13) to the Director. The Plugging Record must be certified as accurate and complete by the person responsible for the plugging operation. At a minimum, the following plugs are required:

PLUG NO. 1: Set a cast iron bridge plug (CIBP) no more than 50 ft above the top perforation at 4408 ft with a minimum 20 ft cement plug on top of the CIBP.

PLUG NO. 2: Set a minimum 200 ft cement plug inside of the 5-1/2" casing across the Trona Zone and the Mahogany Shale, between approximately 2830 ft to 3030 ft.

PLUG NO. 3: Set a minimum 200 ft cement plug inside of the 5-1/2" casing across the Green River, between approximately 1560 ft to 1760 ft.

PLUG NO. 4: Set a minimum 200 ft cement plug on the backside of the 5-1/2" casing, across the Green River, between approximately 1560 ft to 1760 ft.

PLUG NO. 5: Set a minimum 50 ft cement plug on the backside of the 5-1/2" casing, across the surface casing shoe at 355 ft (unless pre-existing backside cement precludes cement-squeezing this interval.)

PLUG NO. 6: Set a cement plug inside of the 5-1/2" casing, from at least 380 ft to 330 ft.

PLUG NO. 7: Set a cement plug on the backside of the 5-1/2" casing, from surface to a depth of at least 50 ft.

PLUG NO. 8: Set a cement plug inside of the 5-1/2" casing from surface to a depth of at least 50 ft.

Cut off surface and 5-1/2" casing at least 4 ft below ground level and set P&A marker; submit Sundry Notices and all necessary data as required by the EPA and other regulatory agencies.

Reporting of Noncompliance:

(a) Anticipated Noncompliance. The operator shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(b) Compliance Schedules. Reports of compliance or noncompliance with, or any progress on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted no later than thirty (30) days following each schedule date.

(c) Written Notice of any noncompliance which may endanger health or the environment shall be reported to the Director within five (5) days of the time the operator becomes aware of the noncompliance. The written notice shall contain a description of the noncompliance and its cause; the period of noncompliance including dates and times; if the noncompliance has not been corrected the anticipated time it is expected to continue; and steps taken or planned to prevent or reduce recurrence of the noncompliance.

Twenty-Four Hour Noncompliance Reporting:

The operator shall report to the Director any noncompliance which may endanger health or environment. Information shall be provided, either orally or by leaving a message, within twenty-four (24) hours from the time the operator becomes aware of the circumstances by telephoning 1.800.227-8917 and asking for the EPA Region 8 UIC Program Compliance and Enforcement Director, or by contacting the Region 8 Emergency Operations Center at 303.293.1788 if calling from outside EPA Region 8. The following information shall be included in the verbal report:

(a) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW.

(b) Any noncompliance with a Permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

Oil Spill and Chemical Release Reporting:

The operator shall comply with all other reporting requirements related to oil spills and chemical releases or other potential impacts to human health or the environment by contacting the **National Response Center (NRC) 1.800.424.8802 or 202.267.2675,** or through the **NRC website at http://www.nrc.uscg.mil/index.htm.**

Other Noncompliance:

The operator shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted.

Other Information:

Where the operator becomes aware that he failed to submit any relevant facts in the Permit application, or submitted incorrect information in a Permit application, or in any report to the Director, the operator shall submit such correct facts or information within two (2) weeks of the time such information became known to him.

WELL-SPECIFIC CONSIDERATIONS

Well Name: **Ute Tribal 16-05**
EPA Well ID Number: **UT20736-06602**

Underground Sources of Drinking Water (USDWs): USDWs in the Antelope Creek Waterflood area generally may occur within the Uinta Formation, which extends from the surface to the top of the Green River Formation at approximately 1660 ft (CBL). According to *"Base of Moderately Saline Ground Water in the Uinta Basin, Utah, State of Utah Technical Publication No. 92,"* the base of moderately saline ground water may be found at approximately 149 ft below ground surface at this well location. Based on analysis of the submitted Well Completion Report the surface casing in this well is at approximately 355 ft (KB) and was filled with 240 sacks of cement.

Confining Zone: The Confining Zone at this location is approximately 206 ft of interbedded limestone and shale between the depths of 3858 ft to 4064 ft (KB) which directly overlies the Injection Zone, based on correlation to the Antelope Creek Ute Tribal 04-03 well Type Log. Additional impermeable lacustrine shale beds above the Confining Zone provide for further protection for any overlying USDW.

Injection Zone: The Injection Zone at this well location is an approximately 2009 ft section of multiple lenticular sand units interbedded with shale, marlstone and limestone from the base of the Confining Zone at 4064 ft (KB) to the top of the Basal Carbonate Formation at 6073 ft (KB)*, based on correlation to the Antelope Creek Ute Tribal 04-03 well Type Log and documentation provide by Petroglyph*.

Well Construction: The CBL was not able to be used to determine if the cement bond across the confining zone is adequate.

Surface casing:	8-5/8" casing is set at 345 ft (KB) in a 12-1/4" hole, using 240 sacks cement circulated to the surface.
Longstring casing:	5-1/2" casing is set at 6420 ft (KB) in a 7-7/8" 6420 ft Total Depth hole with a plugged back total depth (PBTD) of 6195 ft, cemented with 750 sacks cement. Top of Cement (TOC): 300 ft (KB) CBL.
Perforations:	top perforation: **4408 ft** Bottom perforation: **5318 ft**

Wells in Area of Review (AOR): Construction and cementing records, including cement bond logs (CBL) as available, for two wells in the 1/4 mile AOR that penetrated the confining zone were reviewed and found adequate to prevent fluid movement out of the injection zone and into USDWs.

Well: Ute Tribal No. 16-04	Casing Cement top: 154 ft (CBL)
Well: Ute Tribal No. 16-04E	Casing Cement top: 1491 ft (calculated)
Well: Ute Tribal No. 16-05F	Casing Cement top: 1660 ft (CBL)
Well: Ute Tribal No. 16-12	Casing Cement top: 600 ft (CBL)